



Properties and uses of materials



Key Vocabulary	How can we compare and group materials?	Which liquid is the 'thickest'?
<p>brittle: easily broken if pressure is applied.</p>	<p>Materials have properties that make them fit for certain purposes. These may include being: absorbent, brittle, durable, ductile, elastic, electrical conductor, electrical insulator, flexible, hard, malleable, transparent, translucent, opaque, permeable/impermeable, rigid, thermal conductor, thermal insulator, magnetic.</p>	<p>Liquids have properties which include having: [a fixed weight, a fixed volume,] an ability to flow, a level of viscosity and they take on the shape of a container. Viscosity is the property of a liquid that describes how fast or slowly it will flow. The viscosity of a liquid describes how thick or thin it is. A liquid with high viscosity (thick) will flow slowly and a liquid with low viscosity (thin) will flow quick</p> <div data-bbox="1556 635 1989 834" style="text-align: center;"> <p>Water Lower Viscosity</p> <p>Honey Higher Viscosity</p> </div>
<p>flexible: able to bend easily without breaking</p>	<p>thermal conductivity, transparency.</p> <div data-bbox="674 651 1402 895" style="border: 1px solid black; padding: 5px;"> <p>For example, glass is used for windows because it is hard and transparent. Oven gloves are made from a thermal insulator to keep the heat from burning your hand.</p> </div> <div data-bbox="674 906 1402 1013" style="display: flex; justify-content: space-around; text-align: center;"> <div> <p>solid particles</p> </div> <div> <p>liquid particles</p> </div> <div> <p>gas particles</p> </div> </div>	<p>Can the same container keep cold things cold and hot things hot?</p>
<p>ductile: can be stretched or rolled until very thin</p>	<p>How are different materials used?</p> <p>Materials are used in many different ways and for particular purposes based on their properties. Materials can be fit-for-purpose. How materials may vary in form (e.g. plastics of different types) and why they are used for particular purposes. Weathering, wear and tear can occur over time and this will have an impact upon a material's fitness-for-purpose.</p>	<p>A thermal insulator is a material that provides high resistance to heat flow. Examples include rubber, wool, wood, polystyrene/foam, plastics. A thermal conductor is a material that provides low resistance to heat flow. Examples include metals, such as aluminium, steel, and iron.</p> <div data-bbox="1989 1102 2130 1246" style="text-align: right;"> </div> <p>A thermal insulator keeps hot things hot and</p>
<p>fragile: delicate; easily broken if not handled with care</p>	<p>Who invents things?</p>	<p>Which materials are absorbent, permeable or waterproof?</p>
<p>impermeable: not allowing fluid to pass through</p>	<p>Inventors discover new uses for materials and create new materials. Inventors design objects using their knowledge of the properties of materials.</p>	<p>Materials can be absorbent and can soak up and take in liquid. Some materials are permeable and let water pass through. Some materials are waterproof and do not let water pass through. The use of some materials can have an impact on the environment.</p>
<p>malleable/malleability: can be shaped when pressure is applied.</p>		
<p>permeable: allowing fluid to pass through it</p>		
<p>thermal conductor: a material that transmits heat well</p>		
<p>thermal insulator: a material that does not transmit heat well.</p>		
<p>viscosity/viscous: how fast or slowly a liquid will flow;</p>		
<p>wear and tear: deterioration of materials over time due to weathering or regular use.</p>		
<p>property: a characteristic of material; what it is like.</p>		